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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,252	01/23/2004	Yang Wang		8020
7590 04/05/2005				
YANG WANG 7 Black Bear Lane WESTFORD, MA 01886		EXAMINER VANORE, DAVID A		
		ART UNIT 2881		
		PAPER NUMBER		

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/764,252	<b>Applicant(s)</b> WANG, YANG	
	<b>Examiner</b> David A. Vanore	<b>Art Unit</b> 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-15, 17-26, 29-31, 33-35, 37-39, 41-45, 47-55 and 59-67 is/are pending in the application.  
4a) Of the above claim(s) 2, 8-15, 17-26, 31-35, 39-45, 53-55, 62, 63 and 65-67 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 61 is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 29, 30, 33, 34, 37, 38, 41, 42, 49, 52 and 64 is/are rejected.
- 7) ☒ Claim(s) 3, 7, 43, 44, 47, 48, 50 and 51 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/04</u> . | 6) <input type="checkbox"/> Other: _____  |

***Election/Restrictions***

Claims 2, 8-15, 17-26, 31, 35, 39, 45, 53-55, 62-63, and 65-67 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 4, 2005.

Applicant's election with traverse of the election of species in the reply filed on March 4, 2005 is acknowledged. The traversal is on the ground(s) that the species enumerated in the Election of Species set forth in the previous Office action are not patentably distinct and that there is no burden to search all species. This is not found persuasive because the arguments tendered by the applicant are applicable to a restriction requirement. Since the applicant has restated the arguments previously submitted, the examiner similarly maintains the requirement for the election of Species. Since the applicant has elected species I, examination of claims 1, 3-5, 7, 29-30, 33-34, 37-38, 41-44, 47-52, 59-60, and 61 will proceed in this Office action.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 29, 30, 33, 34, 37, 38, 41, 42, 49, and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 29, 30, 33, 34, 37, 38, 41, 42, 49, and 52 recite method steps directed to a method of using the apparatus claim on which they depend. Note the relevant teaching from the MPEP regarding *Ex parte Lyell* cited below.

A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. In *Ex parte Lyell*, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990), a claim directed to an automatic transmission workstand and the method steps of using it was held to be ambiguous and properly rejected under 35 U.S.C. 112, second paragraph. Such claims should also be rejected under 35 U.S.C. 101 based on the theory that the claim is directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. *Id.* at 1551.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 29, 30, 33, 34, 37, 38, 41, 42, 49, and 52 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As pointed out above, claims 29, 30, 33, 34, 37, 38, 41, 42, 49, and 52 recite both an apparatus and the method steps for using said apparatus and therefore overlap two statutory classes of invention.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 4, 5, and 64 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Franzen et al. (USPN 5,468,958).

Regarding claim 1, Franzen et al. teaches an ion trap comprising a three-dimensional rotationally symmetric ring electrode (Items 3, 4, and 5) and two cap electrodes (Items 1 and 2 and Items 6 and 7) where the cap electrodes comprise a cone electrode (Item 2 for example), and a disk electrode (Item 1 for example) where the ring electrodes and cap electrodes generate dipolar, quadrupole, and octopole fields (Col. 3 Lines 59-68). Since the electrodes create the required fields recited in the claim, Franzen et al. satisfies the material requirements of Claim 1.

Regarding claim 4, the cap electrodes are divided into two main parts, denoted by Items 1 and 2. These parts have surfaces corresponding to the conic and spherical surface sections recited in claim 4. For example, the field emitting means of electrode 2 comprises a portion of a spherical surface at a plurality of locations, note the region immediately surrounding the aperture in Item 2 in Fig. 1 at the central axis of the trap and the taper associated with said Item. Secondly, the cap electrodes further comprise a portion having the shape of a conic surface, most notably in Fig. 1 Item 1, where a portion of the electrode sloping towards the aperture, but prior to a “step” on the electrode, has the shape of a conic section. Claim 4 further recites that the “cross sectional surface of the ring electrode consists of a portion of a circle and two straight

lines jointed in orthogonal to the circle, the surfaces of the two cap electrodes facing toward the inside of said ion trap.” This structure recites a rotationally hyperbolic electrode structure and conforms to the electrode structure featured in Fig. 1 of Franzen et al. Note further Col. 4 Lines 43-55.

Regarding claim 5, Franzen et al. teaches that the cap electrodes are divided into rotationally symmetrical sets of component electrodes (Col. 4 Lines 1-24).

Regarding claim 64, Franzen et al. further teaches an operating means (10) for ion mass analysis.

Claims 59-60 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Baba et al. (USPN 6,075,244).

Baba et al. teaches a three dimensional ion trap where the trap is a Paul Trap and the trap is in a chamber maintained at a pressure in the range between  $10^{-2}$  to  $10^{-1}$  millibar. Note Col. 2 Lines 39-62 of Baba et al.

### ***Allowable Subject Matter***

Claims 3, 7, 43-44, 47-48, and 50-51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 3 and 7, the prior art fails to teach or suggest the application of a DC potential to a set of the component electrodes in the cap electrodes of a three dimensional ion trap. By contrast, the prior art most relevant to an ion trap having cap electrodes divided into multiple component electrodes, Franzen et al., utilizes only an RF signal to create dipole, quadrupole, and octupole fields in a three dimensional ion trap. Claims 43-44, 47-48, and 50-51 are similarly indicated as having allowable subject matter by virtue of their dependency.

Claim 61 is allowed.

The following is an examiner's statement of reasons for allowance:

Claim 61 is allowable for the reasons set forth regarding claims 3 and 7 above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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